BEAVER DAM LAKE

Dubois County

2007 Fish Management Report

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EXECUTIVE SUMMARY

- A general survey was conducted from May 21 to 23, 2007. Submersed aquatic vegetation was sampled on July 23.

- Beaver Dam Lake has a maximum depth of 28.0 ft. The water temperature was 74°F and the Secchi disk depth was 5.6 ft.

- Submersed vegetation was found at 63% of the littoral sites to a maximum depth of 5.5 ft. Three native species, brittle naiad, chara, and slender naiad, were collected. Brittle naiad was the most frequently occurring (30%), followed by slender naiad (4%), and chara (2%).

- A total of 999 fish, representing nine species, was sampled that weighed an estimated 314 lbs. Bluegill dominated the sample by number (51%), followed by redear sunfish (18%), and largemouth bass (15%). Largemouth bass ranked first by weight (40%), followed by redear sunfish (28%), and bluegill (18%). Longear sunfish, black crappie, yellow bullhead, channel catfish, warmouth, and brown bullhead were also collected.

- Bluegill growth was excellent with age-2 and age-3 bluegill averaging 4.3 and 6.7 in. Largemouth bass growth was good with age-2 and age-3 bass averaging 9.5 and 11.0 in.

- Beaver Dam Lake provides excellent fishing for bluegill, largemouth bass, and redear sunfish. Bluegill exhibited excellent growth and 20% were at least 7.0 in. Largemouth bass grew good and were collected up to 20.6 in with 21% being at least 14.0 in. Sixty-nine percent of the redear were at least 8.0 in.

- The black crappie fishery was modeled with FAST to determine if any regulation changes should be made. Results indicated that with the current growth and assumed low fishing mortality a regulation change would not benefit the population.

- Overall, Beaver Dam Lake is an excellent all around fishery and has been since 1991. A general survey should be conducted in 2015 to check on the status of this lake.

INTRODUCTION

Beaver Dam Lake is a 147-acre impoundment located approximately 5.0 mi east of the Town of Jasper in Dubois County. The lake was constructed in 1958 as a water supply lake for the Town of Jasper and now serves as a secondary water source. The shoreline is developed with many houses and boat docks around the lake. A concrete boat ramp owned by the Jasper Park and Recreation Department is available for boat launching. Access fees are $15.00 for an annual boat launching permit for boats without motors, $20.00 for boats with motors of 10 horsepower or less, and $25.00 for boats with larger outboard motors.

Past fish management practices have consisted of channel catfish stockings since 1978. Surveys in 1991 and 1999 showed that the fishery was in excellent condition. The 1999 survey revealed good fishing for bluegill, largemouth bass, redear sunfish, and black crappie. These species exhibited good growth.

METHODS

A general survey was conducted from May 21 to 23, 2007. Some of the lake's physical and chemical characteristics were measured. Submersed aquatic vegetation was sampled on July 23 using guidelines written by the Indiana Department of Natural Resources (2006).

Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.75 h, four trap net lifts, and eight experimental-mesh gill net lifts. All fish collected were measured to the nearest 0.1 in TL. Average weights were estimated by using Fish Management District 7 averages. Scale samples were taken from a subsample of game fish for age and growth analysis. Otoliths were removed from a subsample of crappie for age and growth analysis. Fishery Analyses and Simulation Tools (FAST) software was used to model the crappie population under different minimum size limits (MSLs) (Slipke and Maceina 2000). Proportional stock density (PSD) and relative stock density (RSD) indices were calculated for largemouth bass, bluegill, and redear sunfish (Anderson and Neumann 1996). The bluegill fishing potential index (BGFP) was used to classify the quality of the bluegill fishery (Ball and Tousignant 1996). All sampling was done in accordance with the Division of Fish and Wildlife sampling guidelines (Shipman 2001).

RESULTS

Beaver Dam Lake has a maximum depth of 28.0 ft. The water temperature was 74°F and the Secchi disk depth was 5.6 ft.

Submersed vegetation was found at 63% of the littoral sites to a maximum depth of 5.5 ft. Three native species, brittle naiad, chara, and slender naiad, were collected. Brittle naiad was the most frequently occurring (30%), followed by slender naiad (4%), and chara (2%).

A total of 999 fish, representing nine species, was sampled that weighed an estimated 314 lbs. Bluegill dominated the sample by number (51%), followed by redear sunfish (18%), and largemouth bass (15%). Largemouth bass ranked first by weight (40%), followed by redear sunfish (28%), and bluegill (18%). Longear sunfish, black crappie, yellow bullhead, channel catfish, warmouth, and brown bullhead were also collected. Species collected in past surveys include bluntnose minnow, green sunfish, blackstripe topminnow, creek chubsucker, and grass pickerel.

A total of 511 bluegill was sampled that weighed 58 lbs. They ranged in length from 1.0 to 8.4 in. The bluegill electrofishing catch rate was 554.7/h compared to 761.0/h in 1999. The net catch rates were 7.3/gill net lift and 9.3/trap net lift. Growth was excellent with age-2 and age-3 bluegill averaging 4.3 and 6.7 in. Bluegill growth in 1999 was nearly identical to 2007.

The bluegill PSD substantially increased from 15 (1999) to 30. The suggested PSD range indicating a balanced bluegill fishery is 20 to 60 (Anderson and Neumann 1996). The RSD-7 was 14 and RSD-8 was 0 compared to the 1999 values of 10 and 2. The BGFP index value was 27 compared to 30 in 1999; both scores classified the lake as an “excellent” bluegill fishery.

A total of 176 redear sunfish was collected that weighed 88 lbs. They ranged in length from 2.9 to 11.3 in. The redear electrofishing catch rate was 58.7/h compared to 27.0/h in 1999. The net catch rates were 0.1/gill net lift and 32.8/trap net lift. Growth was excellent with age-3 and age-4 redear averaging 8.7 and 9.6 in. Redear growth in 1999 was similar with age-3 and age-4 fish averaging 7.9 and 9.0 in. The redear PSD was 66 and the RSD-9 was 32 compared to 44 and 39 in 1999.

A total of 151 largemouth bass was collected that weighed 125 lbs. They ranged in length from 3.6 to 20.6 in. The largemouth electrofishing catch rate was188.0/h compared to 291.0/h (excluding YOY) in 1999. The net catch rates were 1.0/gill net lift and 1.0/trap net lift.

Growth was good with age-2 and age-3 bass averaging 9.5 and 11.0 in. Bass were reaching 14.0 in in the fourth year of growth. Growth was similar in 1999 with age-2 and age-3 bass averaging 8.3 and 11.5 in.

The largemouth bass PSD increased from 43 (1999) to 52. The suggested PSD range indicating a balanced largemouth bass fishery is 40 to 70 (Anderson and Neumann 1996). The RSD-14 was 24 and RSD-15 was 17 compared to the 1999 values of 13 and 8.

A total of 52 black crappie was collected that weighed 19 lbs. They ranged in length from 3.1 to 10.9 in. The catch rates were 4.0/electrofishing hour, 5.0/gill net lift, and 2.0/trap net lift. The gill net catch rate in 1999 was 4.0/lift. Growth was good with age-2 and age-5 crappie averaging 7.9 and 10.1 in. However, growth appears to be climaxing at 10.5 in. Growth was also good in 1999 with age-2 and age-4 crappie averaging 8.1 and 11.8 in.

DISCUSSION

Beaver Dam Lake provides excellent fishing for bluegill, largemouth bass, and redear sunfish and good fishing for crappie. Bluegill exhibited excellent growth and 20% were at least 7.0 in. Largemouth bass grew good and were collected up to 20.6 in with 21% being at least 14.0 in. Sixty-nine percent of the redear were at least 8.0 in and 50% of the crappie were at least 9.0 in.

The bluegill population has improved since 1999. The PSD doubled to 30 and the RSD-7 is 14. Also, growth was fast at all ages. Beaver Dam Lake should continue to provide excellent bluegill fishing for several years.

The largemouth bass population has also improved since 1999. The PSD slightly increased and the RSD-14 nearly doubled to 24. Five percent of bass collected were at least 18.0 in. The bass electrofishing catch rate declined from 291.0/h in 1999 to 188.0/h, however this is still a good catch rate.

The redear sunfish fishery is one of the best in the area. These fish are fast growing and were collected up to 11.0 in. Twenty percent of redear were at least 10.0 in.

The black crappie fishery was modeled to determine if a regulation change would improve the population. Results from FAST indicate that under a 9.0 in minimum size limit, (MSL) yield would slightly decrease with a conditional mortality (cm) of 0.50 and slightly increase with a cm of 0.30. Imposition of a 10.0 in MSL would slightly decrease yield under

both estimates. Imposing a 9.0 or 10.0 in MSL would increase the numbers of larger crappie, if fishing mortality was high and if growth rates did not slow around age 4. However, at this time no regulation changes are recommended for the fishery because fishing mortality appears to be low due to older crappie not exceeding 10.5 in.

The channel catfish population is definitely being utilized as only four fish were collected. The fish collected were at least 14.0 in. Due to the low catch rates, it is recommended that the biennial catfish stockings continue.

Overall, Beaver Dam Lake is an excellent fishery and has been since 1991. It is recommended that a general survey be conducted in 2015 to check on the status of this fishery.

RECOMMENDATIONS

- Channel catfish should continue to be stocked biennially.
- A general survey should be conducted in 2015 to check on the status of the fishery.

LITERATURE CITED

Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 *in* B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Ball, R. L. and J. N. Tousignant. 1996. The development of an objective rating system to assess bluegill fishing in lakes and ponds. Research report. Indiana Department of Natural Resources. Indianapolis. 18 pp.

Indiana Department of Natural Resources. 2006. Tier II aquatic vegetation survey protocol. 9 pp.

Shipman, S. 2001. Manual of fishery survey methods. Indiana Department of Natural Resources. Indianapolis. 67 pp.

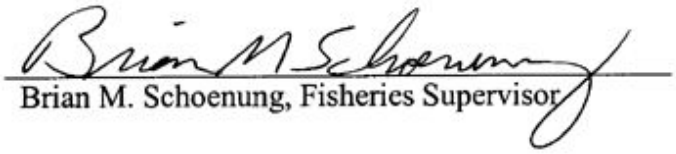
Slipke, J. W. and M. J. Maceina. 2000. Fishery analyses and simulation tools. Auburn University, Auburn, Alabama.

Submitted by: Michelle L. Cain, Assistant Fisheries Biologist

Date: January 4, 2008

Approved by: Daniel P. Carnahan, Fisheries Biologist

Date: January 23, 2008

Approved by: 
Brian M. Schoenung, Fisheries Supervisor

Date: April 25, 2008

Appendix
Fisheries Survey Data

LAKE SURVEY REPORT

Type of Survey: [ ] Initial Survey [X] Re-Survey

Lake Name	County	Date of survey (Month, day, year)
Beaver Dam Lake	Dubois	May 21 to 23, 2007
Biologist's name		**Date of approval (Month, day, year)**
Michelle L. Cain		April 25, 2008

LOCATION

Quadrangle Name	Range	Section
Dubois	4W	26, 27, 28, 33, 34, 35
Township Name	**Nearest Town**	
1S	Celestine	

ACCESSIBILITY

State owned public access site	Privately owned public access site	Other access site
	Concrete boat ramp owned by City of Jasper	

Surface acres	Maximum depth	Average depth	Acre feet	Water level	Extreme fluctuations
147	28	13	1,896	498 MSL	Winter drawdown

Location of benchmark: NE1/4, NW 1/4, SE1/4, Section 33

INLETS

Name	Location	Origin
Eight intermittent streams	Runoff	

OUTLETS

Name	Location
Beaver Creek	SW1/4, SE1/4, NW1/4, Section 27

Water level control: 12.0 in pipe with valve about 6.0 ft below normal pool; rock spillway

POOL	ELEVATION (Feet MSL)	ACRES
TOP OF DAM		
TOP OF FLOOD CONTROL POOL		
TOP OF CONSERVATION POOL	498	147
TOP OF MINIMUM POOL		
STREAMBED		

Bottom type

[ ]	Boulder
[X]	Gravel
[X]	Sand
[X]	Muck
[X]	Clay
[ ]	Marl

Watershed use: Agriculture, forest

Development of shoreline: One city owned mooring area by boat ramp. Numerous private cottages, homes, and boat docks. Some rip rap.

Previous surveys and investigations: General fisheries surveys in 1962, 1966, 1968, 1977, 1987, 1991, and 1999.

SAMPLING EFFORT					
ELECTROFISHING	Day hours		Night hours 0.75		Total hours 0.75
TRAP NETS	Number of traps 2		Number of Lifts 2		Total effort 4
GILL NETS	Number of nets 4		Number of Lifts 2		Total effort 8
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS	
Color: Green	Turbidity: 5 Feet 7 Inches (SECCHI DISK)
Alkalinity (ppm)*: Surface: 51.3 Bottom: 51.3	pH: Surface: 9.5 Bottom: 6.5
Conductivity: micromhos	Air temperature: °F
Water chemistry GPS coordinates: N 38.40232 W -86.84300	

TEMPERATURE AND DISSOLVED OXYGEN (D.O.)								
DEPTH (FEET)	Degrees (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)
SURFACE	74.4		36			72		
2			38			74		
4			40			76		
6			42			78		
8			44			80		
10			46			82		
12			48			84		
14			50			86		
16			52			88		
18			54			90		
20			56			92		
22			58			94		
24			60			96		
26			62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS
Dissolved Oxygen meter was broken. Secchi disk reading was 1.5 ft on July 23.

*ppm-parts per million

Occurrence and Abundance of Submersed Aquatic Plants

Lake:	Beaver Dam Lake	**Secchi (ft):**	1.5	**SE Mean Species / Site:**	0.07
Date:	7/23/2007	**Littoral Sites w/Plants:**	17	**Mean Natives / Site:**	0.36
Littoral Depth (ft):	5.5	**Number of Species:**	3	**SE Mean Natives / Site:**	0.07
Littoral Sites:	27	**Max. Species / Site:**	2	**Species Diversity:**	0.29
Total Sites:	50	**Mean Species / Site:**	0.36	**Native Diversity:**	0.29

Species	Frequency of Occurrence	Score Frequency 0	1	3	5	Dominance
Brittle naiad	30	70	18	2	10	14.8
Chara	2	98	2	0	0	0.4
Slender naiad	4	96	4	0	0	0.8

SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER AND WEIGHT					
*COMMON NAME OF FISH	NUMBER	PERCENT	LENGTH RANGE (inches)	WEIGHT (pounds)	PERCENT
Bluegill	511	51.2	1.0 - 8.4	57.82	18.4
Redear sunfish	176	17.6	2.9 - 11.3	88.33	28.2
Largemouth bass	151	15.1	3.6 - 20.6	125.47	40.0
Longear sunfish	95	9.5	2.7 - 6.4	5.04	1.6
Black crappie	52	5.2	3.1 - 10.9	18.71	6.0
Yellow bullhead	7	0.7	7.4 - 11.5	3.73	1.2
Channel catfish	4	0.4	14.2 - 24.6	13.27	4.2
Warmouth	2	0.2	2.7 - 8.4	0.20	0.1
Brown bullhead	1	0.1	12.7	1.05	0.3
	999			313.62	

*Common names of fishes recognized by the American Fisheries Society.

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0	5	1.0	0.01	0, 1	19.0				
1.5	10	2.0	0.01	1	19.5				
2.0	28	5.5	0.01	1	20.0				
2.5	42	8.2	0.01	1	20.5				
3.0	48	9.4	0.02	1, 2	21.0				
3.5	73	14.3	0.03	2	21.5				
4.0	71	13.9	0.05	2	22.0				
4.5	29	5.7	0.07	2	22.5				
5.0	15	2.9	0.09	2	23.0				
5.5	17	3.3	0.13	2, 3	23.5				
6.0	33	6.5	0.17	3, 4	24.0				
6.5	42	8.2	0.22	3, 4	24.5				
7.0	64	12.5	0.28	3, 4	25.0				
7.5	29	5.7	0.34	4, 5	25.5				
8.0	5	1.0	0.41	5, 6	26.0				
8.5					TOTAL	511			
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	554.7/h	GILL NET CATCH	7.3/lift	TRAP NET CATCH	9.3/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF REDEAR SUNFISH									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5	1	0.6	0.02	1	20.5				
3.0	1	0.6	0.02	1	21.0				
3.5	1	0.6	0.02	1	21.5				
4.0	1	0.6	0.05	1	22.0				
4.5	1	0.6	0.07	2	22.5				
5.0					23.0				
5.5					23.5				
6.0	6	3.4	0.17	2	24.0				
6.5	22	12.5	0.22	2	24.5				
7.0	17	9.7	0.27	2	25.0				
7.5	5	2.8	0.33	2, 3	25.5				
8.0	11	6.3	0.40	2, 3	26.0				
8.5	25	14.2	0.48	3, 4	TOTAL	176			
9.0	25	14.2	0.57	3, 4					
9.5	24	13.6	0.66	4					
10.0	18	10.2	0.76	4					
10.5	16	9.1	0.87	5					
11.0	2	1.1	0.98	5					
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	58.7/h	GILL NET CATCH	0.1/lift	TRAP NET CATCH	32.8/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0	1	0.7	3.95	7
1.5					19.5	4	2.6	4.04	8
2.0					20.0				
2.5					20.5	1	0.7	4.72	9
3.0					21.0				
3.5	3	2.0	0.03	0, 1	21.5				
4.0	3	2.0	0.03	0, 1	22.0				
4.5	6	4.0	0.04	0, 1	22.5				
5.0	5	3.3	0.06	1, 2	23.0				
5.5	8	5.3	0.08	1	23.5				
6.0	7	4.6	0.10	1	24.0				
6.5	3	2.0	0.13	1, 2	24.5				
7.0					25.0				
7.5	1	0.7	0.20	1	25.5				
8.0	2	1.3	0.24	2	26.0				
8.5	3	2.0	0.28	2	TOTAL	151			
9.0	11	7.3	0.33	2					
9.5	13	8.6	0.39	2					
10.0	12	7.9	0.46	2, 3					
10.5	8	5.3	0.53	2, 3					
11.0	3	2.0	0.62	3					
11.5	5	3.3	0.71	3, 4					
12.0	5	3.3	0.80	4					
12.5	3	2.0	0.91	4					
13.0	13	8.6	1.02	4					
13.5	6	4.0	1.15	4					
14.0	8	5.3	1.31	4, 5					
14.5	3	2.0	1.47	4, 5					
15.0	3	2.0	1.68	4, 5					
15.5	2	1.3	1.88	5					
16.0	3	2.0	2.08	5					
16.5	4	2.6	2.40	5					
17.0									
17.5									
18.0	2	1.3	3.19	7					
18.5									

ELECTROFISHING CATCH	188.0/h	GILL NET CATCH	1.0/lift	TRAP NET CATCH	1.0/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLACK CRAPPIE									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0	2	3.8	0.02	1	21.0				
3.5	2	3.8	0.03	1, 2	21.5				
4.0					22.0				
4.5	3	5.8	0.05	1	22.5				
5.0					23.0				
5.5	1	1.9	0.10	2	23.5				
6.0					24.0				
6.5					24.5				
7.0	2	3.8	0.21	2	25.0				
7.5	3	5.8	0.24	2	25.5				
8.0	4	7.7	0.28	2	26.0				
8.5	9	17.3	0.36	2	TOTAL	52			
9.0	1	1.9	0.43	2					
9.5	15	28.8	0.48	3, 4, 5, 6					
10.0	5	9.6	0.60	3, 5, 6					
10.5	5	9.6	0.79	4, 5, 6					
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	4.0/h	GILL NET CATCH	5.0/lift	TRAP NET CATCH	2.0/lift

BLUEGILL AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE 1	2	3	4	5	6
1.0	5	4	4					
1.5	10	5	10					
2.0	28	5	28					
2.5	42	5	42					
3.0	48	5	10	38				
3.5	73	5		73				
4.0	71	5		71				
4.5	29	5		29				
5.0	15	5		15				
5.5	17	5		7	10			
6.0	33	5		26	7			
6.5	42	6			21	21		
7.0	64	6			21	43		
7.5	29	6				24	5	
8.0	5	4					4	1
Totals	511	76	93	260	59	88	9	1

AGE-LENGTH KEY SUMMARY

Age	Number	Mean TL	Var	SE	Lower 95%CI	Upper 95%CI
1	93	2.4	0.42	0.07	2.3	2.6
2	260	4.3	0.77	0.05	4.2	4.4
3	59	6.7	0.29	0.07	6.6	6.8
4	88	7.3	0.13	0.04	7.2	7.3
5	9	8.0	0.07	0.09	7.8	8.1
6	1	8.3			8.3	8.3

REDEAR SUNFISH AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE 1	2	3	4	5
2.5	1	1	1				
3.0	1	1	1				
3.5	1	1	1				
4.0	1	1	1				
4.5	1	1		1			
5.0							
5.5							
6.0	6	4		6			
6.5	22	9		22			
7.0	17	5		17			
7.5	5	3		2	3		
8.0	11	6		2	9		
8.5	25	6			17	8	
9.0	25	6			8	17	
9.5	24	5				24	
10.0	18	6				18	
10.5	16	5					16
11.0	2	2					2
Totals	174	60	4	50	38	67	18

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean TL	Var	SE	Lower 95%CI	Upper 95%CI
1	4	3.5	0.42	0.32	2.9	4.1
2	50	6.9	0.29	0.08	6.8	7.1
3	38	8.7	0.20	0.07	8.5	8.8
4	67	9.6	0.24	0.06	9.5	9.8
5	18	10.8	0.03	0.04	10.7	10.9

LARGEMOUTH BASS AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE 1	2	3	4	5	6	7	8	9
3.5	3	2	2								
4.0	3	1	1								
4.5	6	5	5								
5.0	5	5	4	1							
5.5	8	5	8								
6.0	7	4	7								
6.5	3	3	2	1							
7.0											
7.5	1	1	1								
8.0	2	2		2							
8.5	3	3		2							
9.0	11	5		11							
9.5	13	5		13							
10.0	12	6		8	4						
10.5	8	6		3	5						
11.0	3	3			3						
11.5	5	5			4	1					
12.0	5	3				5					
12.5	3	3				3					
13.0	13	4				13					
13.5	6	5				6					
14.0	8	7				6	2				
14.5	3	3				1	2				
15.0	3	3				1	2				
15.5	2	2					2				
16.0	3	3					3				
16.5	4	3					4				
17.0											
17.5											
18.0	2	2							2		
18.5											
19.0	1	1							1		
19.5	4	4								4	
20.0											
20.5	1	1									1
Totals	151	105	30	41	16	36	15		3	4	1

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean TL	Var	SE	Lower 95%CI	Upper 95%CI
1	30	5.6	0.80	0.16	5.3	5.9
2	41	9.5	1.01	0.16	9.2	9.8
3	16	11.0	0.33	0.14	10.7	11.2
4	36	13.4	0.60	0.13	13.1	13.6
5	15	15.7	0.86	0.24	15.2	16.2
6						
7	3	18.6	0.33	0.33	17.9	19.3
8	4	19.8			19.8	19.8
9	1	20.8				

BLACK CRAPPIE AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE 1	2	3	4	5	6
3.0	2	2	2					
3.5	2	2	1	1				
4.0								
4.5	3	3	1					
5.0								
5.5	1	1		1				
6.0								
6.5								
7.0	2	1		4				
7.5	3	3		3				
8.0	4	4		4				
8.5	9	9		9				
9.0	1	1		1				
9.5	15	15			2	4	7	2
10.0	5	5			1		3	1
10.5	5	5				1	3	1
Totals	52	51	4	23	3	5	13	4

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean TL	Var	SE	Lower 95%CI	Upper 95%CI
1	4	3.8	0.50	0.35	3.0	4.5
2	23	7.9	1.47	0.25	7.4	8.5
3	3	9.9	0.08	0.17	9.6	10.3
4	5	10.0	0.20	0.20	9.6	10.4
5	13	10.1	0.18	0.12	9.9	10.3
6	4	10.1	0.23	0.24	9.6	10.6

GPS LOCATION OF SAMPLING EQUIPMENT									
GILL NETS			TRAP NETS			ELECTROFISHING		
1	N 38.39830	W -86.83368	1	N 38.39835	W -86.83072	1	N 38.39823	W -86.83408
2	N 38.40018	W -86.83440	2	N 38.39610	W -86.83012		N 38.39628	W -86.83120
3	N 38.40293	W -86.83950	3	N 38.39670	W -86.84757	2	N 38.39977	W -86.83320
4	N 38.40137	W -86.84437	4	N 38.39450	W -86.84610		N 38.40197	W -86.83543
5	N 38.39815	W -86.84443	5	N	W	3	N 38.39687	W -86.84742
6	N 38.39618	W -86.84577	6	N	W		N 38.39563	W -86.84792
7	N 38.39762	W -86.83827	7	N	W	4	N	W
8	N 38.39935	W -86.83385	8	N	W		N	W
9	N	W	9	N	W	5	N	W
10	N	W	10	N	W		N	W
11	N	W	11	N	W	6	N	W
12	N	W	12	N	W		N	W
13	N	W	13	N	W	7	N	W
14	N	W	14	N	W		N	W
15	N	W	15	N	W	8	N	W
16	N	W	16	N	W		N	W
17	N	W	17	N	W	9	N	W
18	N	W	18	N	W		N	W
19	N	W	19	N	W	10	N	W
20	N	W	20	N	W		N	W
						11	N	W
							N	W
						12	N	W
							N	W
						13	N	W
							N	W
						14	N	W
							N	W
						15	N	W
							N	W
						16	N	W
							N	W
						17	N	W
							N	W
						18	N	W
							N	W
						19	N	W
							N	W
						20	N	W
							N	W